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Baumann™ 87000 Flexsleev Sanitary Control Valve

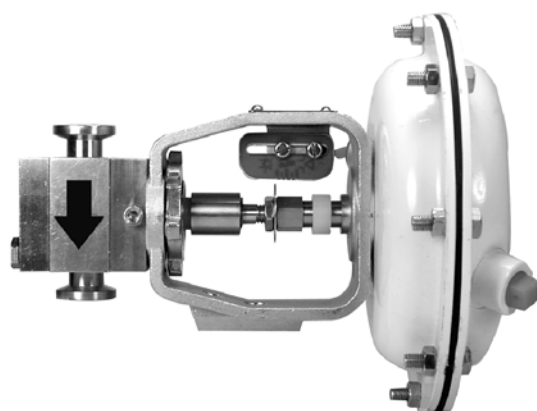


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Figure 1. Baumann 87000 Valve



W9823

RECOMMENDED MOUNTING POSITION
FOR SELF-DRAINING



W9824

WITH FIELDVUE™ DVC2000
DIGITAL VALVE CONTROLLER

Introduction

The Baumann 87000 Flexsleev control valve (figure 1) with tri-clamp body connections and polished flow contours, is excellent for throttling high purity liquid or gaseous media. The valve is suitable for repeated steam sterilization cycles with 35 psi maximum steam pressures. Assembly of valve body sections uses only two bolts allowing for ease of cleaning and inspection. A lower telltale port is provided. The valve will drain either horizontally or vertically with the actuator in the horizontal position. The operation is not affected by vacuum.

Scope of Manual

This instruction manual includes installation, maintenance, and parts information for the Baumann 87000 sanitary control valve.

Do not install, operate, or maintain Baumann 87000 control valves without being fully trained and qualified in valve, actuator, and accessory installation, operation, and maintenance. To avoid personal injury or property damage, it is



important to carefully read, understand, and follow all the contents of this manual, including all safety cautions and warnings. If you have any questions about these instructions, contact your Emerson Process Management sales office before proceeding.

WARNING

Always wear protective gloves, clothing and eyewear when performing any installation operations to avoid personal injury.

Personal injury or property damage caused by sudden release of pressure or bursting of pressure retaining parts may result if service conditions exceed those for which the product was intended. To avoid injury or damage, provide a relief valve for over pressure protection as required by government or accepted industry codes and good engineering practices.

Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

If installing into an existing application, also refer to the WARNING at the beginning of the Maintenance section in this instruction manual.

CAUTION

This valve is intended for a specific range of pressures, temperatures and other application specifications. Applying different pressures and temperatures to the valve could result in parts damage, malfunction of the control valve or loss of control of the process. Do not expose this product to service conditions or variables other than those for which the product was intended. If you are not sure what these conditions are you should contact your Emerson Process Management sales office for more complete specifications. Provide the product serial numbers (shown on the nameplate) and all other pertinent information.

WARNING

If you move or work on an actuator installed on a valve with loading pressure applied, keep your hands and tools away from the stem travel path to avoid personal injury. Be especially careful when removing the stem connector to release all loading on the actuator stem whether it be from air pressure on the diaphragm or compression in the actuator springs.

Likewise take similar care when adjusting or removing any optional travel stop. Refer to the relevant actuator Maintenance Instructions.

Maintenance

WARNING

Avoid personal injury and property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

- Do not remove the actuator from the valve while the valve is still pressurized.
- Always wear protective gloves, clothing, and eyewear when performing any maintenance operations.
- Disconnect any operating lines providing air pressure, electric power, or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.

- Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure on both sides of the valve. Drain the process media from both sides of the valve.
- Depending on the actuator construction, it will be necessary to manage the pneumatic actuator spring pre-compression. It is essential to refer to the relevant actuator instructions in this manual to perform safe removal of the actuator from the valve.
- Use lock-out procedures to be sure the above measures stay in effect while you work on the equipment.
- The valve packing box may contain process fluids that are pressurized, *even when the valve has been removed from the pipeline*. Process fluids may spray out under pressure when removing the packing hardware or packing rings, or when loosening the packing box pipe plug.
- Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

Note

Whenever a gasket seal is disturbed by removing or shifting gasketed parts, install a new gasket during reassembly. This provides a good gasket seal because the used gasket may not seal properly.

WARNING

Avoid personal injury or property damage by thoroughly cleaning the line of all dirt, welding chips, scale, oil or grease, and other foreign material. Failure to do so could result in damage to the seating and sealing surfaces of the valve and result in release of process materials.

Installation and Maintenance

1. Before installing the valve in the pipeline, thoroughly clean the line of all dirt, welding chips, scale, oil or grease, and other foreign material. A micron size filter is recommended upstream of the valve.
2. Install the valve so the controlled fluid will flow through the valve body in the direction indicated by the arrow on the valve body.
3. A three-valve bypass must be used to permit removal of the control valve from the line without shutting down the system.

WARNING

To avoid personal injury or property damage, do not attempt to do any work on a valve while the system is in operation, the valve must be isolated 100% from the active system and the isolated line voided of pressure and/or hazardous fluids.

Air Piping

Refer to figure 2.

1. For an air-to-extend actuator (air-to-close action), connect the actuating air pressure line to the 1/4 NPT opening in the upper diaphragm case. For an air-to-retract actuator (air-to-open action) connect the actuating air pressure line to the 1/4 NPT in the lower diaphragm case.

2. Use 6.4 mm (1/4 inch) O.D. tubing or equivalent for all air lines. If the air line exceeds 8 m (25 ft) in length, 9.5 mm (3/8 inch) tubing is preferred. For proper operation, air lines must not leak. Air pressure should not exceed 2.5 bar (35 psig).
3. Tri-clamp connections should line up properly to provide a tight seal.

CAUTION

Do not place the valve in a vise. This will damage the exterior of the valve body and possibly the end connections of the valve.

⚠ WARNING

If there is evidence of process fluid under pressure leaking from the joint, retighten the valve body/joint nuts. Return to the Warning at the beginning of the Installation and Maintenance section to ensure proper steps have been taken to isolate the valve and relieve process pressure.

Disassembly of Valve

Refer to figure 3.

1. Depressurize the pipeline and valve interior. Disconnect air lines from the positioner.
2. Loosen the tri-clamp connections and remove the valve from the line.
3. Remove the hex head cap screws (key 12) that secure the valve body to the lower bonnet (key 3) and the upper bonnet (key 2). Remove the upper bonnet, actuator and positioner from the valve. Be sure the ceramic ball (key 5) does not fall out of the assembly and get lost.
4. In order to remove the shaft (key 4), unscrew the alignment pin (key 15) and remove the retaining ring (key 11).

Reassembly of Valve

Refer to figures 3, 4, and 5.

1. Reassemble the valve in reverse order using the instructions above. The valve body is designed so it cannot be assembled improperly. Make sure the beveled edge of the anvil (key 8) points toward the ceramic ball (key 5). Make sure the tapered end of the sleeve bushing (key 6) also points towards the ceramic ball.
2. If the sleeve (key 7) seating surface is distorted, the sleeve should be replaced, or be rotated to use a new seating surface.
3. New O-rings (keys 9 and 50) should be installed after suitable lubrication (e.g. food grade) of the shaft O-ring (key 50).
4. Make sure the alignment pin (key 15) is tight and the shaft (key 4) moves easily.
5. Refer to separate instructions for the actuator (D103352X012) and positioner assembly and maintenance.
6. Place the actuator yoke over the shaft (key 4). While tilting the actuator back, drop the yoke drive nut (key 16) over the shaft (key 4). Run the locknut (key 27), and travel indicator (key 58) down as far as possible onto the shaft (key 4).
7. Carefully place the actuator yoke in a vertical position and thread the actuator stem onto the shaft, spin the actuator onto the shaft as far as it will go before adjusting the bench range. Refer to Baumann Pneumatic Actuators instruction manual, D103352X012.

Parts Ordering

When corresponding with your Emerson Process Management sales office about this equipment, always mention the valve serial number. When ordering replacement parts, also specify the key number, part name, and desired material using the following parts tables.

⚠ WARNING

Use only genuine Fisher® replacement parts. Components that are not supplied by Emerson Process Management should not, under any circumstances, be used in any Fisher valve, because they may void your warranty, might adversely affect the performance of the valve, and could cause personal injury and property damage.

Figure 2. Baumann 87000 Valve

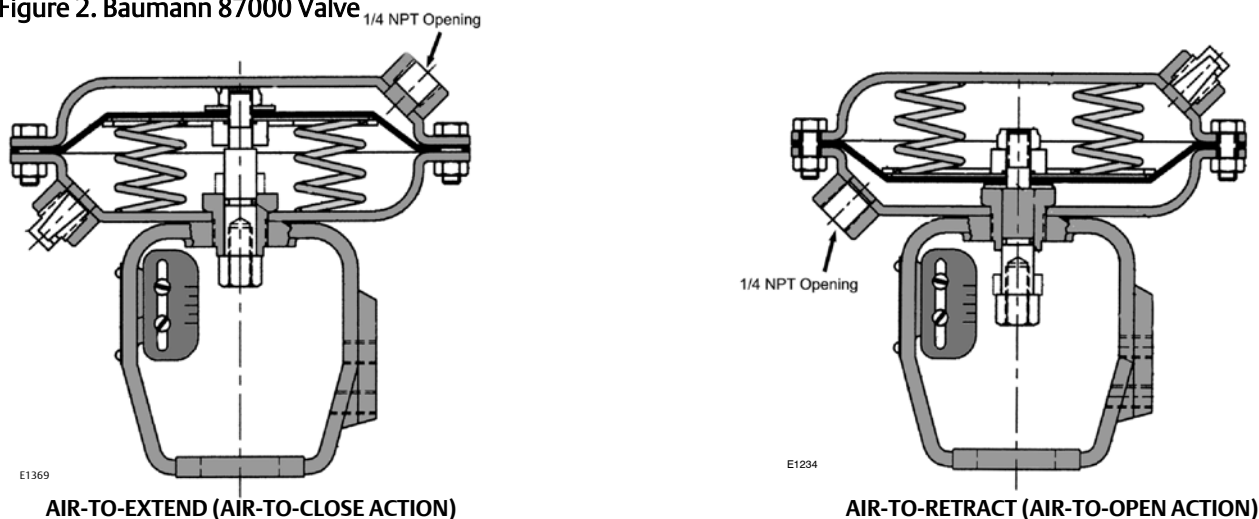


Figure 3. Baumann 87000 Flexsleev Valve Assembly

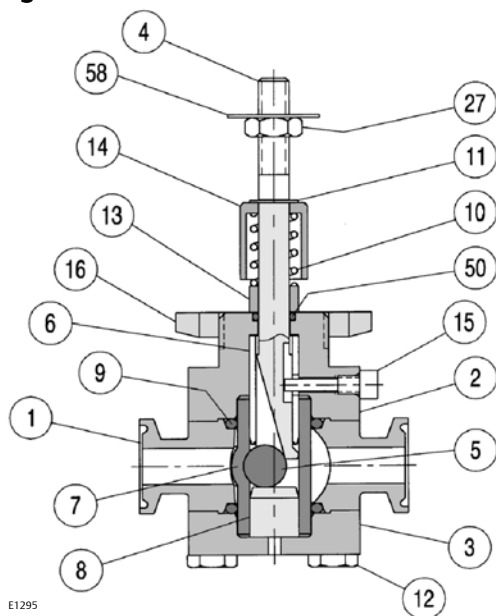
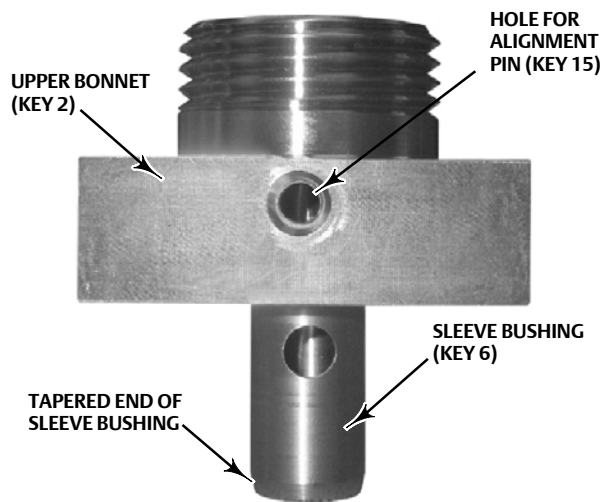
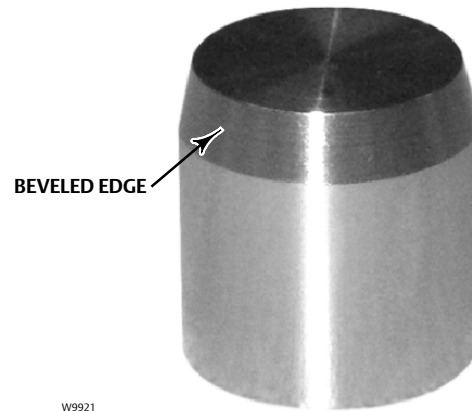


Figure 4. Upper Bonnet and Sleeve Bushing



W9920

Figure 5. Upper Bonnet and Sleeve Bushing

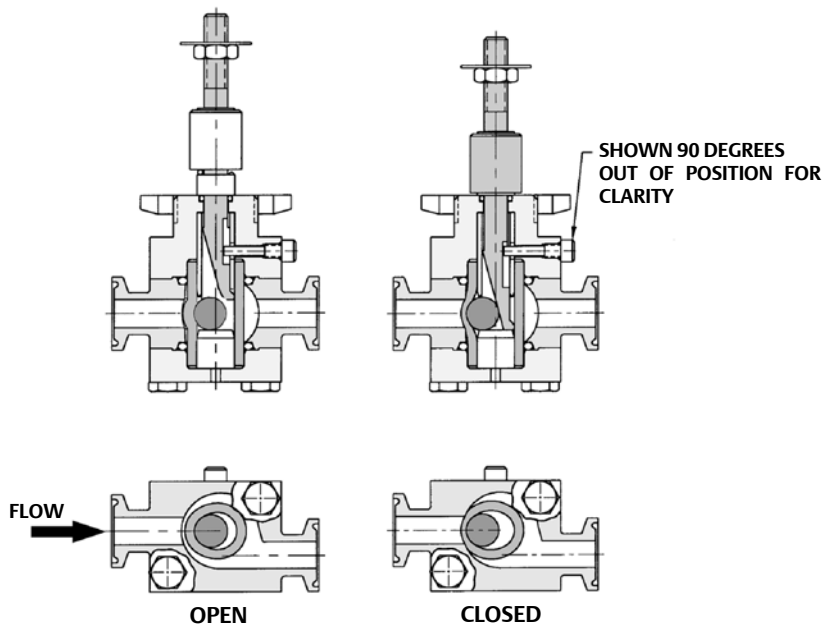


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Table 1. Baumann 87000 Parts List

KEY NO.	QTY	DESCRIPTION	PART NUMBER	
			30 Ra	20 Ra
1	1	Valve Body, Cv= 0.25 (orifice diameter = 3.18 mm [0.125 inches])	87104	87104-1
		Valve Body, Cv = 1.25 (orifice diameter = 9.40 mm [0.370 inches])	87105	87105-1
2	1	Bonnet, Upper	87305	
3	1	Bonnet, Lower	87306	
4	1	Shaft	87505	
5	1	Ceramic Ball	87405	
6*	1	Sleeve Bushing	87605	
7*	1	Sleeve, VMQ (Silicone)	87705-688	
		Sleeve, EPDM	87705-709	
		Sleeve, FKM (Fluorocarbon)	87705-697	
		Sleeve, FFKM (Perfluoroelastomer)(Consult Factory)	87705-703	
8	1	Anvil	87406	
9*	2	O-Ring, VMQ (Silicone)	87706-688	
		O-Ring, EPDM	87706-709	
		O-Ring, FKM (Fluorocarbon)	87706-697	
		O-Ring, FFKM (Perfluoroelastomer)(Consult Factory)	87706-703	
10*	1	Spring, Stem	87803	
11	1	Retaining Ring	87806	
12	2	Hex Head Cap Screw	87807	
13	1	Spring, Seat	87802	
14	1	Protecting Cap	87801	
15	1	Alignment Pin	87805	
16	1	Drive Nut, Actuator Yoke	011757-003-153	
27	1	Jam Nut (locknut)	81841	
50*	1	O-Ring	24080	
58	1	Travel Indicator	011765-002-152	

Figure 6. Mode of Operation

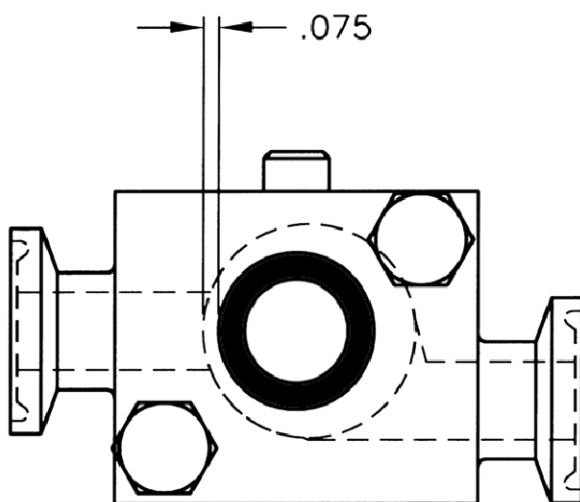


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Mode of Operation

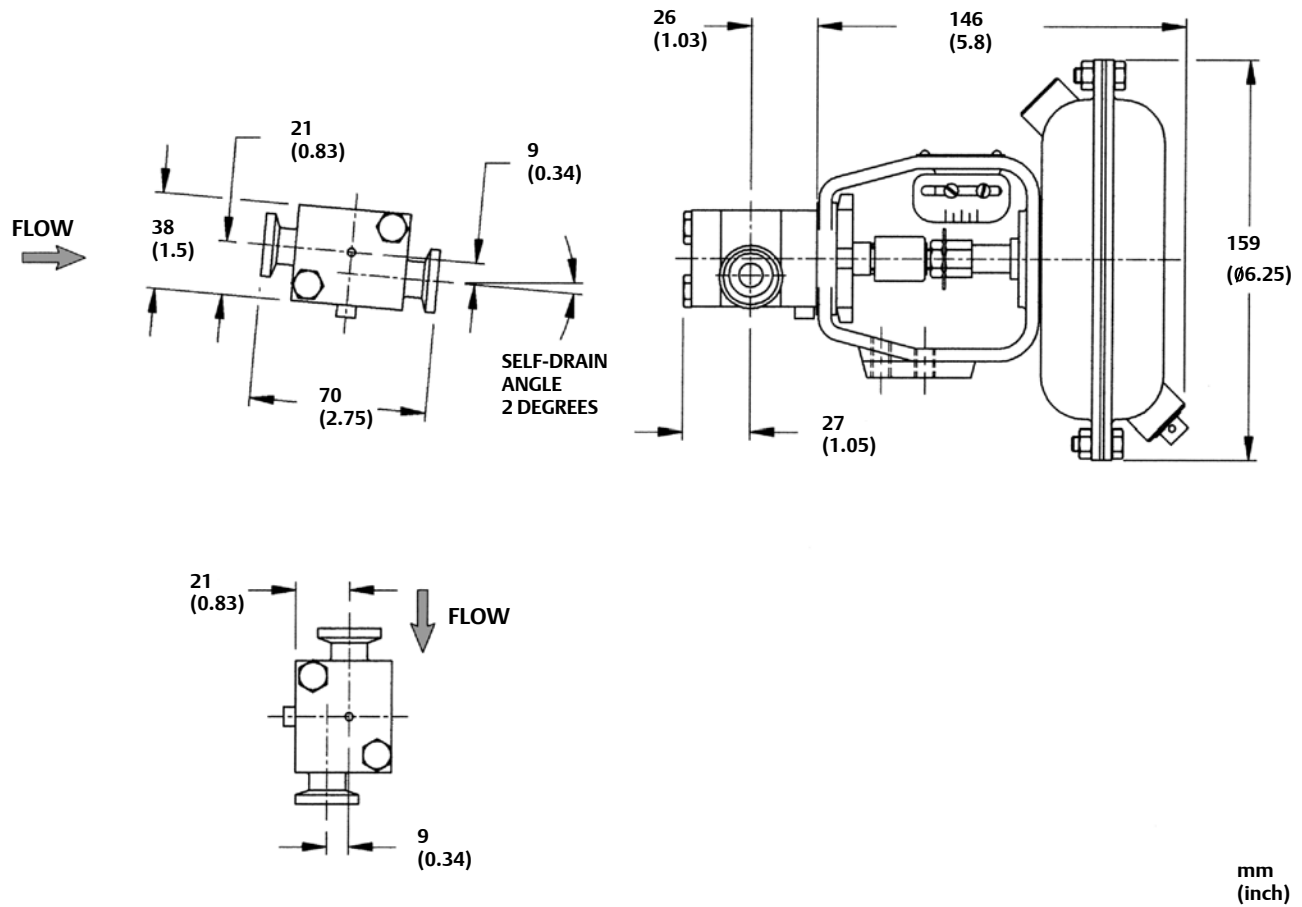
As shown in figure 6, a flexible sleeve is inserted through the length of the valve and sealed between the valve body and bonnet by O-rings. The actuator-motivated valve stem has a tapered groove that pushes a ceramic ball against the inside of the sleeve and, thereby, the sleeve against a valve seat.

Figure 7. Sleeve Clearance



E1374

Figure 8. Dimensions

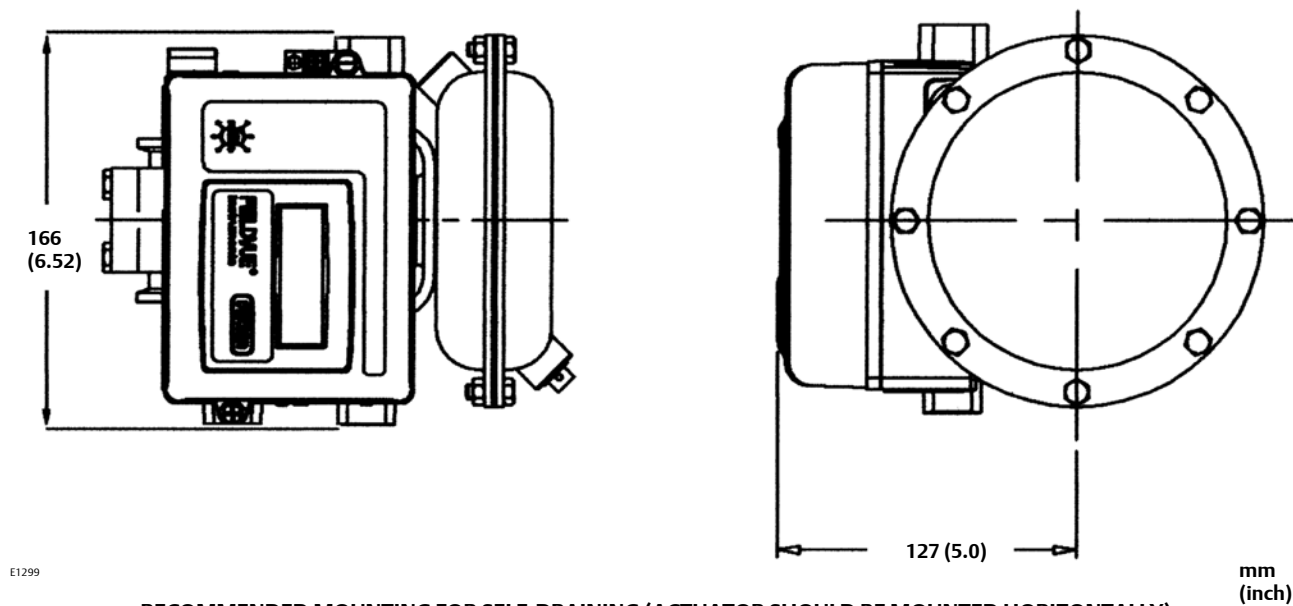


E1297

RECOMMENDED MOUNTING FOR SELF-DRAINING (ACTUATOR SHOULD BE MOUNTED HORIZONTALLY)

NOTE: ACTUATOR REQUIRES 115 mm (4.5 INCHES) VERTICAL CLEARANCE.

Figure 9. Dimensions



E1299

RECOMMENDED MOUNTING FOR SELF-DRAINING (ACTUATOR SHOULD BE MOUNTED HORIZONTALLY)
NOTE: ACTUATOR REQUIRES 115 mm (4.5 INCHES) VERTICAL CLEARANCE.

Figure 10. Dimensions

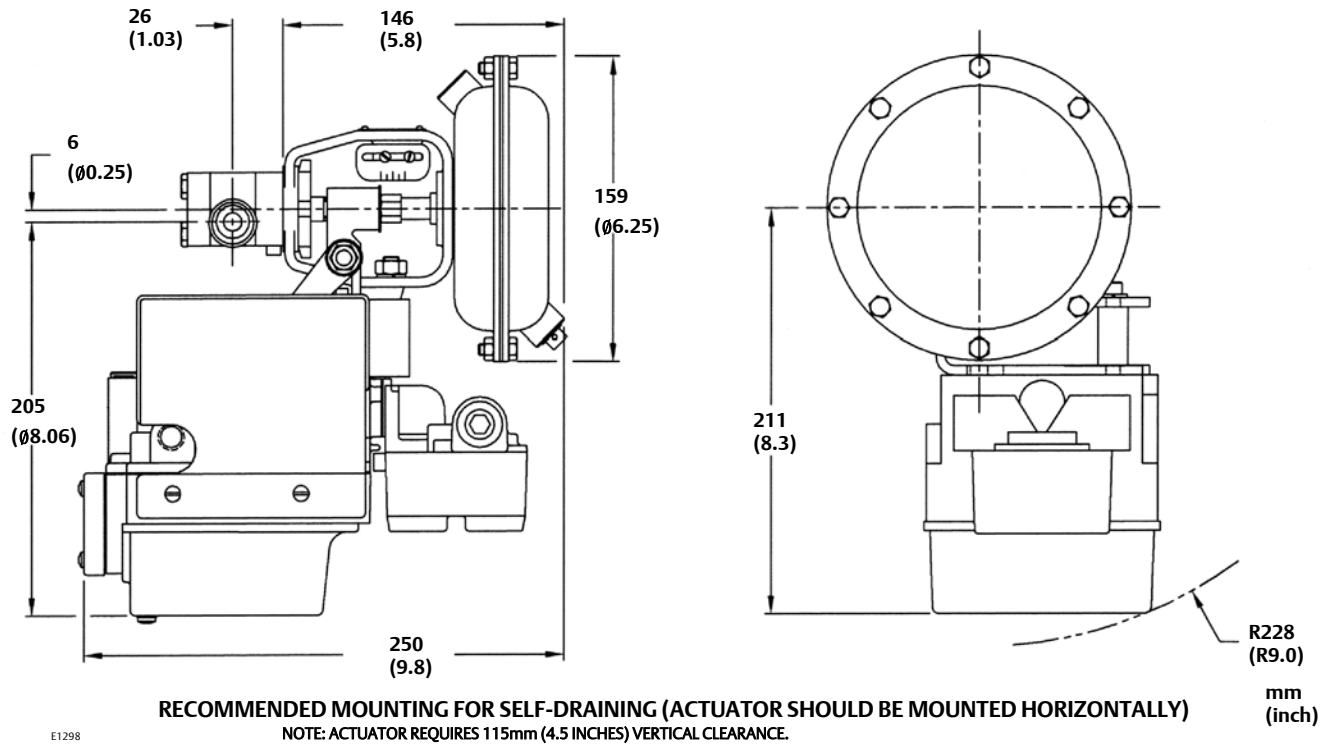


Table 2. Weights, Valve, Actuator, and Positioner

VALVE						ACTUATOR		POSITIONER ⁽¹⁾			
Size		Travel		Weight		Baumann 16		FIELDVUE DVC2000		FIELDVUE DVC6010	
DN	NPS	mm	Inch	kg	lb	kg	lb	kg	lb	kg	lb
15	1/2	7.9	0.3125	3.6	8	4.5	10	1.5	3.3	3.5	7.7

1. Not available with Fisher 3660/3661 positioner.

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